



# nano<sup>SP</sup>

# 830SP

Operating and  
Maintenance Manual  
(Serial No. 17774216D onwards)

**POWER  
TOWERS**  
■ Low-level Powered Access  
a JLG company

[www.powertowers.com](http://www.powertowers.com)

## CONTENTS

Introduction	2
Operating Specifications	3
Working Envelope Diagram	3
Do's and Don'ts	4
Primary Components	5
Operating Procedures (Incl. Emergency Operation)	6-8
Maintenance Procedures (incl. Battery Charging)	9-15
Transport and Storage	16-17
Warranty Terms	18
Key Spare Parts	19-22
Electrical Circuit Diagram	23-24
Hydraulic Circuit Diagram	25

## INTRODUCTION

The Nano SP / 830SP (referred to as "the machine" in this manual) is designed to be a simple, safe and efficient self-propelled alternative to push-around platforms or traditional scaffold tower or podium steps. It can be used for many applications including construction and maintenance where the convenience and efficiency of using a self-propelled platform is preferred. The machine is ideal for working on raised access flooring or other delicate flooring due to its low overall weight and low point loading.

The machine is suitable for any application provided it is used within its operating parameters and should always be used on flat, level and hard surfaces such as concrete. If used for hazardous applications such as shot-blasting, welding, paint spraying or with any other hazardous materials, measures must be taken to ensure the machine does not become damaged in any way that may impair safety or reliability. Additional protection for the operator will be required in some cases, which is the responsibility of the operator and the operators employer.

The purpose of this manual is to provide owners, operators, lessors and lessees with the precautions and operating procedures essential for the safe and proper machine operation for its intended purpose. The procedures should be followed by anybody giving familiarisation training for the machine. We recommend any operator of the machine should also have had formal certificated training, such as IPAF category 3A, in addition to machine specific familiarisation.

The product must comply with all safety related bulletins, which are sent to the owner on record. Contact Power Towers Ltd to ensure owner records are updated and accurate and that the related bulletins are completed.

**This is not a workshop manual. please contact the manufacturer or their authorised agent for specific operation and maintenance information.**

**The health and safety of the operator or maintenance technician is the responsibility of the individual and/or their employer and not Power Towers Ltd.**

**It is essential to be familiar with the operating, maintenance and safety guidelines contained within this manual prior to operation of the machine.**

**OPERATING SPECIFICATIONS**

**Working Dimensions**

Maximum working height:	4.50 m
Maximum platform height:	2.50 m
Outreach with cantilever deck to cage edge:	0.50 m
Basket dimensions:	1.00 m x 0.73 m
Basket dimensions with cantilever:	1.50 m x 0.73m
Basket dimensions without cantilever:	1.00m x 0.73m
Working footprint:	1.22 m x 0.75 m
Safe working load:	200 kg (1 person plus tools)
Maximum manual force:	200 N
Max. gradient for operation:	0°
Max. wind force:	12.5 m/sec
Maximum weight Inc payload:	500 kg + 200 kg = 700 kg
Maximum castor point load	225 kg (2.2 kN)
Drive Speed Max.:	3.0 KpH
Drive Speed Slow:	1.0 KpH
Elevated Drive Speed:	0.7 KpH
Max. Wheel force:	2.2 kN

**Closed Dimensions**

Length:	1.22 m
Width:	0.75 m
Height:	1.59 m
Weight:	500 kg

**Power Source/Drive**

Standard 24v DC Electric Motor:

24v DC Motor/Gearbox Drive:

**Battery Charger Specification**

Input Voltage:

If single voltage: 180-265v AC

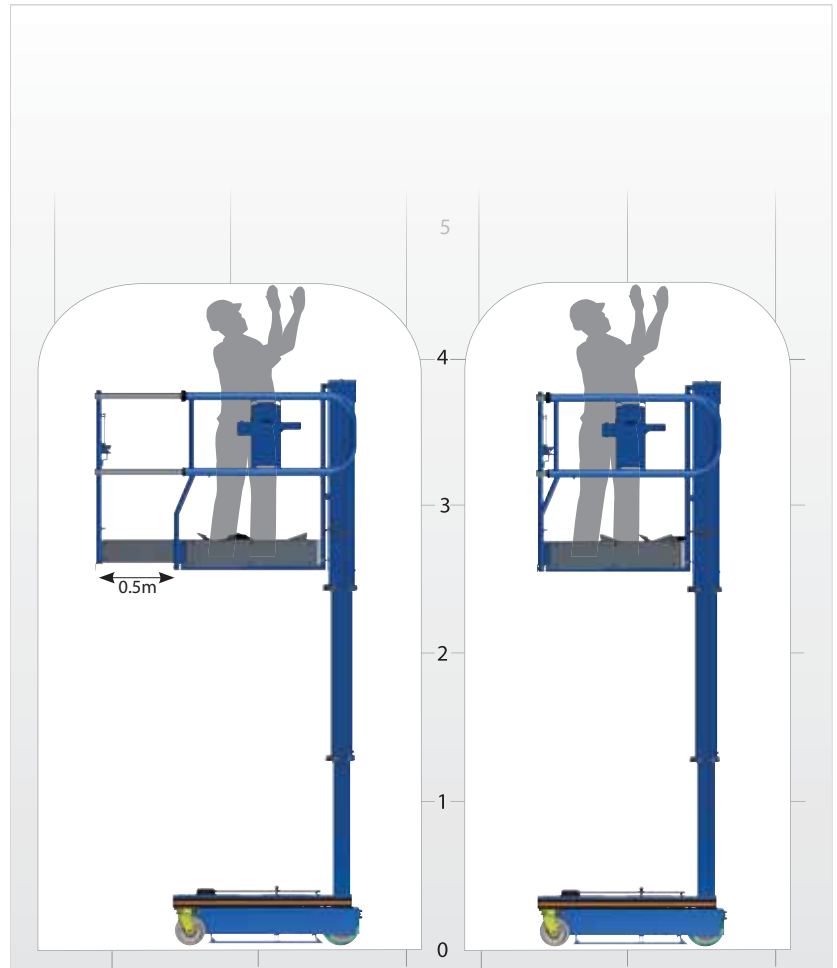
If dual voltage: 90-250v AC

Frequency: 45-65 Hz

Output: 24V DC, 7/8A

Emission EN 55014N, EN 61000 – 3 – 2

Power Sound Level: Less than 70dba



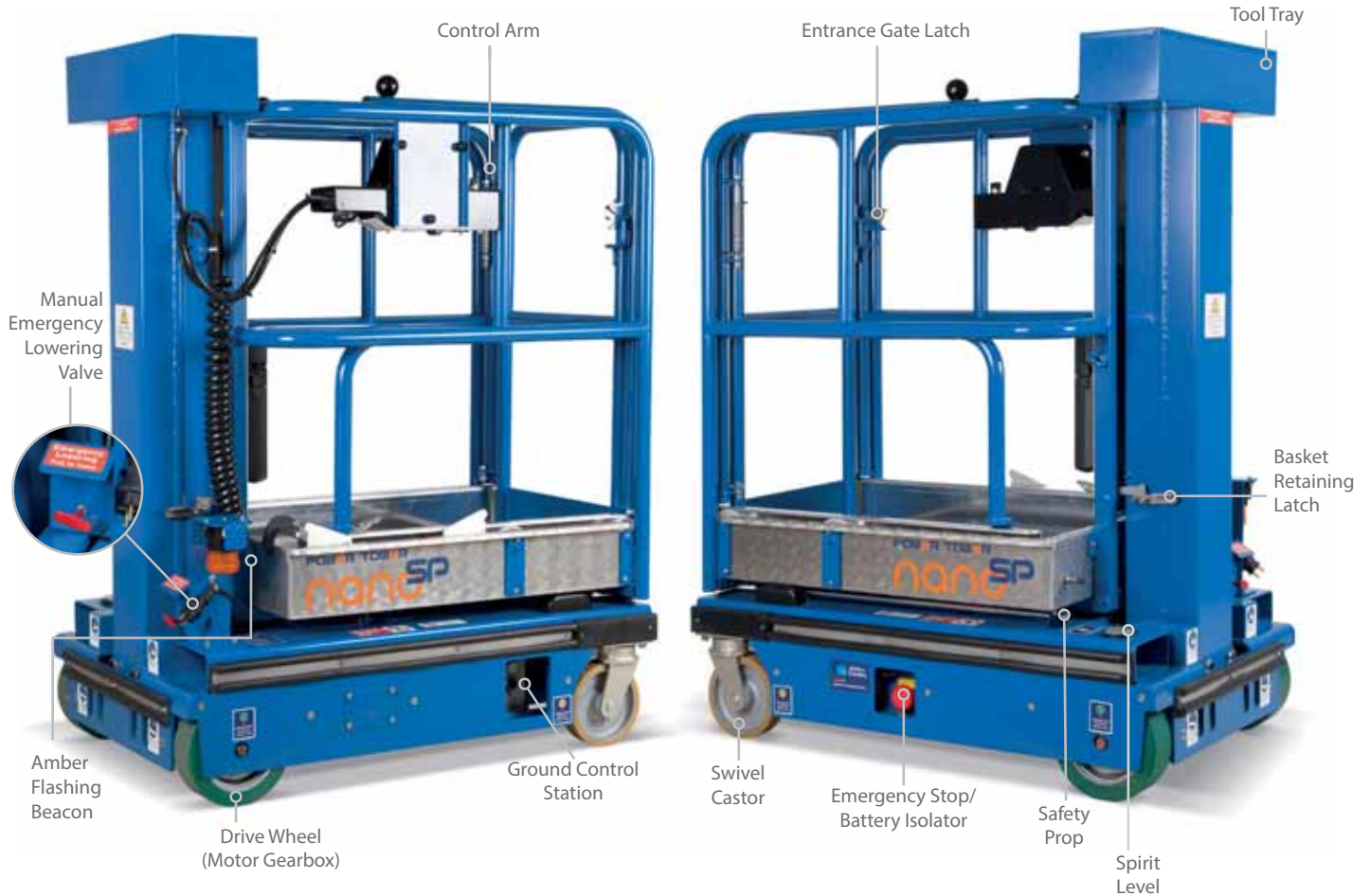
### DO'S

1. Read and adhere to the instructions on the machine and in the Instruction Guide and Operator Manual.
2. Ensure pre-operation checks and operations are carried out in the manner described.
3. Use only on hard, level surfaces able to support the weight of the machine (e.g. concrete floor, tiled floor, hard wood floor).
4. Ensure operator is fit and does not suffer from fear of heights.
5. Ensure guardrail gate is closed and latched before elevation. Only enter and exit the platform through the gate.
6. Ensure work area around the machine is cordoned off from pedestrians and other traffic. Ensure non-operating persons are at least 1.8m (6') away from the machine.
7. Ensure the correct safety equipment is worn by the operator and ground persons during operation. Ensure loose fitting clothing or long hair is secured and will not become entangled in equipment.
8. Ensure the Basket is correctly positioned so as not to come into contact with fixed or moving objects.
9. Ensure the machine is always driven in a safe and sensible manner. Do not drive on a public highway.
10. Ensure to be careful not to collide with objects when driving the machine.
11. Ensure that the safe working load is evenly distributed in the basket.
12. Always ensure your body and limbs are within the guardrail when elevating.
13. Avoid contact with fixed objects (walls, buildings, etc) and moving objects (cranes, vehicles, etc).

### DON'TS

1. Never exceed the safe working load 200kg (1 person plus tools).
2. Never use in wind speeds in excess of 12.5m/s.
3. Never use the machine on sloping or uneven ground.
4. Never use the machine as a goods lift or crane.
5. Never exceed horizontal forces (maximum horizontal force 200N), and never work in a way to create a swaying motion of the platform.
6. Never drive the machine near holes in the floor (or edge of concrete slab, manholes, drains etc).
7. Never use in the vicinity of live conductors. This machine is not insulated.
8. Never extend the height or reach of the work platform by using boxes, steps, ladders.
9. Never modify the machine in any way without the full approval of the manufacturer.
10. When used outdoors never attach signs or boards or any object which might increase the wind force to the machine and affect stability.
11. Never exit or enter the work platform other than when it is in the transport position and only via the access gate.
12. Never use the machine in an explosive or hazardous environment. This machine is not approved for hazardous environments.
13. Never use the machine if you are fatigued.
14. Never use the machine inappropriately or for 'horseplay'.
15. Never use the machine if under the influence of drugs or alcohol.
16. Never use the machine if suffering from poor health or using medication which might impair the safe operation of the machine.
17. Never use the machine if vision is impaired by bright lighting.
18. Never push the machine on sloping surfaces without the use of a safe method.
19. Never push or pull objects with the platform.
20. Never attach loads such as boards or pipes outside the guard rails unless authorised to do so by the manufacturer. Never carry materials directly on platform guard rails unless approved by Power Towers Ltd.
21. Never use a malfunctioning machine.

PRIMARY COMPONENT LOCATIONS



**Do not operate until inspections and functional checks have been performed as specified below.**

## OPERATING PROCEDURES

It is essential to be familiar with the correct operating procedures as described in this manual.

The operator must have adequate training for this type of platform.

The machine requires approved certificated training such as the IPAF 3A category training for self-propelled vertical MEWPS. In addition it is essential that the operator has specific familiarisation handover training for the machine.

The machine is fitted with a lanyard attachment point as standard. If the operator chooses to wear a safety harness, an approved 'fall restraint' type harness should be worn.

Operating Procedures are divided into three key areas:

### 1. Pre-operation checks.

What to do before operating the machine.

### 2. Normal operation.

How to use the machine safely.

### 3. Emergency Operation.

How to lower the machine without power or in the event of operator incapacity.



## PRE-OPERATION CHECKS

Before operating the machine the operator should check that the working area is suitable for the machine. The ground should be suitable to take the total weight of the machine plus payload (i.e. 500kg + 200kg): a hard level surface is required e.g. concrete, tiled flooring, adequately supported laminate flooring, raised access flooring (light duty). If unsure check floor specifications before use.

The ground should be free from debris and the operator should beware of holes, hatches, pits, unprotected manholes, drains etc.

The work area should be cordoned off in a way to prevent inadvertent collision with other personnel, plant or vehicles working in the area. Check there are no live electrical cables or conductors that the operator could come close to or into contact with when carrying out tasks. Check there are no overhead obstructions likely to cause the operator or the machine danger.

### A. Visual Inspection

**Carry out a thorough visual inspection of the machine.**

**Look specifically for any signs of damage to:**

1. Handrails, platform deck, cantilever deck and operation.
2. Lifting mast structure, chassis area structure.
3. Pothole mechanism.
4. Wheels and castors, for tyre damage and fixings.
5. Main control cable (curly cable to control arm).
6. All of the key fixings are intact and tight.
7. Check all instruction, information and safety decals are affixed and are legible.
8. Ensure the platform access gate self closes and locks when released and that the platform floor is free from debris, especially grease or other slippery substances.
9. Check the machines for modifications to original components. Ensure that any modifications have been approved by Power Towers Ltd.

**B. Ensure battery is charged by checking joystick LED light (green = charged).**

**C. Ensure hydraulic oil level is at correct level. Do not over fill. Check for hydraulic leaks.**

**D. Check machine functions are working correctly before normal use:**

1. Check lift functions at ground and in basket by lifting approx. 0.5m.
2. Check emergency lowering functions at ground and in basket by lifting 0.5m.
3. Check pothole mechanism and interlock work correctly by lifting 0.5m.
4. Check emergency stop functions at ground and in basket.

Check drive and steer functions work correctly by selecting slow speed in closed position first, followed by fast speed. Check automatic elevated drive speed is engaged by elevating approx. 0.5m. Then select drive; the joystick right-hand mode light (orange or green) should be flashing and drive speed should be slightly slower than slow closed speed. Check machine brakes when joystick is released.

## NORMAL OPERATION

### To operate from the basket.

1. Ensure all pre-operation checks have been carried out.
2. Check spirit level to ensure machine is level.
3. Release isolator/emergency stop button at the side of the chassis.
4. Turn ignition key in ground emergency stop button and release; Power light should illuminate. Check lights.
5. Check 'Platform' is selected on ground control panel.
6. Enter basket via gate only and ensure the gate is closed and latched correctly when in basket.
7. The ideal position to operate the machine is to stand facing towards the gate end with your back against the mast.
8. Switch on joystick controller by depressing the green on off button – left (see illustration right).
9. Select function by pressing blue mode button (see illustration right). Press and immediately release (0.1 second approximately) to select drive speed right hand LED will illuminate (Green = fast; Orange = slow). Press and hold for approximately 1 second to select lift functions centre LED light will illuminate (see illustration right).

When drive is selected move joystick forward, backward, left and right as required. Drive speed is variable depending on how far the joystick is moved. To stop the machine release the joystick. Take particular care when driving in fast speed when cantilever deck is extended, quick turns may be awkward to control in confined areas. **Always select slow speed when driving in congested/confined areas.**

When lift function is selected, move joystick forward (towards gate) to elevate, backwards to descend. Always check for overhead obstructions before elevating. Always ensure your body & limbs are within the platform guardrails when elevating.

The user shall obtain the guidance and approval of the manufacturer in the event of any special working methods or conditions which are outside those specified by the manufacturer.

## EMERGENCY OPERATION

The machine is fitted with two modes of emergency lowering, one from the basket and one at the ground. Always check the area below the platform is free from obstructions before lowering, and that it is safe to do so.

### From the basket:

In the event of the tilt alarm cut out being activated the basket control joystick will be immobilised and a red warning light and alarm on the basket control panel will operate. To descend, press the black button **A** on the basket control panel. Releasing the button will stop the descent.

In the event of the load sensing or pot hole interlock operating, the red warning light and alarm will activate. To stop the alarm remove the load or if not overloaded lower the platform to the ground using the platform emergency lowering button.

### From the ground:

In the event of control failure or operator incapacity the emergency lowering valve located on the chassis can be used to manually lower the platform. Simply pull the emergency lowering handle **B** located at the rear of the machine to lower the platform. Stand clear of the descending structure. Release the emergency lowering handle to stop descent.





### BATTERY CHARGING (230V IP65 CHARGER)

Switch off the machine and isolate power by depressing the battery isolator switch at the side of the chassis **A**, circled.

The charging lead **B** is at the rear of the chassis and is fitted with a 230V plug.

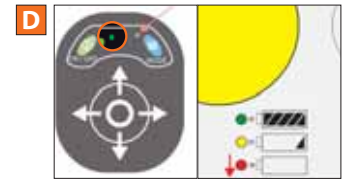
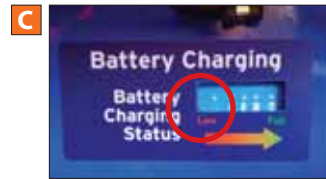
The input voltage is 180-265V AC.

The battery charger is located at the side of the chassis, and the indicator LEDs are visible through the opening in the side skirt **C**.

1. Check battery fluid levels.
2. Only charge in a well ventilated area.  
Note: points 1 and 2 only applicable to Lead Acid Batteries.
3. Connect mains plug to 230v supply.
4. The left hand LED will illuminate **C**, circled; if flashing, a fault is indicated. Disconnect and reconnect to the mains supply. If flashing continues, seek technical support.
5. The LEDs will illuminate left to right. When extreme right (Full) LED is illuminated the charge is complete.
6. Disconnect from the mains supply.

Charge status is also indicated by the colour of the LED on the joystick controller:

Red indicates that the machine is not charged, Amber indicates that the machine has a partial charge, and Green indicates the machine is fully charged **D**.



The battery charger can be connected to the mains supply at any time or left for extended periods. The machine can be operated when the charger is connected, although this is not recommended. All mains supply should be protected with a suitable RCD.

## BATTERY CHARGING (90-250V IP21 CHARGER)

Switch off the machine and isolate power by depressing the battery isolator switch at the side of the chassis **A**, circled.

The charging lead (usually fitted with a yellow 110V plug) **B** is at the rear of the chassis (this lead can be fitted with 230V plug if required).

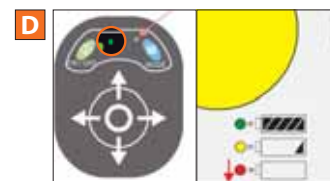
The battery charger is voltage sensitive, no voltage selection is required.

The battery charger is located at the side of the chassis, and the indicator LEDs are visible through the opening in the side skirt **C**, circled.

1. Check battery fluid levels.
2. Only charge in a well ventilated area.  
Note: points 1 and 2 only applicable to Lead Acid Batteries.
3. Connect mains plug to a 110v or 230v supply.
4. The Green LED on the charger indicates connection to power supply.
5. The Yellow LED on the charger indicates battery is charging.
6. Charging is complete when the Yellow LED on the charger switches off.
7. Disconnect from the mains supply.

Charge status is also indicated by the colour of the LED on the joystick controller:

Red indicates that the machine is not charged, Amber indicates that the machine has a partial charge, and Green indicates the machine is fully charged **D**.



The battery charger can be connected to the mains supply at any time or left for extended periods. The machine can be operated when the charger is connected, although this is not recommended. All mains supply should be protected with a suitable RCD.

**DISPLAY CONTROLS**

Front panel has a 4-digit display with 4 LEDs, and one single user button.

The normal display is battery voltage, when no LEDs are on and there are no flashing dots on the display. The display changes from green (ok) to red when the voltage is below the pre-set limit for use.

Pressing the button ONCE displays run time, in hours and minutes, or hours only once the total has exceeded 99 hours 59 minutes. Pressing the button again displays the current time.

Error messages:

If an error occurs the display will flash the error code in red. The codes are:

- |                          |                                 |
|--------------------------|---------------------------------|
| 01 – solenoid failure    | 04 – internal tamper switch     |
| 02 – relay failure       | 05 – overload (pressure) switch |
| 03 – tilt switch trigger |                                 |

If the alarm was generated by the internal tamper switch it will be reset immediately but it will not be displayed.

If the alarm was from either the tilt switch or the pressure sensor the display will remain for 3 minutes then self-reset.

If error code 01 or 02 are displayed, please contact your supplier for technical help.

Do not attempt to resolve the error unless authorised to do so by Power Towers Ltd or their representative.



Please note that whilst the machine is extremely simple to maintain, all work must be carried out by a competent person. It is of the utmost importance that maintenance personnel pay strict attention to these precautions to avoid possible injury to personnel or damage to the machine or property. A maintenance program must be established by a qualified person and must be followed to ensure the machine is safe.

When removing checkerplate covers for maintenance purposes, first switch off by depressing the emergency stop/battery isolator button located at the base of the machine. Use appropriate safety/personnel protection equipment where necessary. Never Jetwash components within the cabinet tray or control arm.

### DAILY MAINTENANCE

Tilt cage by releasing basket securing latch on cage mount (see pic). Pull and lift cage frame from gate end and cage will lift and tilt assisted by gas strut. Ensure gas strut is full extended and separate safety prop is in place before working under raised cage. You can now access the powerpack housing. Unscrew the black retaining knobs and lift out the checkerplate cover.

In addition to regular thorough visual inspections there are a number of simple daily and weekly maintenance tasks that should be carried out by the operator or other competent person.

**Always use chemical resistant gloves and safety goggles/glasses when checking battery electrolyte levels.**

#### 1. Check Battery Electrolyte Level (Lead Acid Batteries only):

Remove battery cover, and battery caps. Ensure the electrolyte covers the plates by approximately 1-5mm. Replenish with distilled water to this level, only if the electrolytic level is below the top of the plates.

#### 2. Check Hydraulic Oil Level:

Ensure the tank is not overfilled. The level must only be checked when the machine is in the transport position. The correct level in this position is approximately 3/4 from the base of the tank, as indicated by the line.

3. Check hydraulic connections around the pump are tight and undamaged.
4. Check the spirit level to ensure it is clearly legible and undamaged.
5. Check all functions operate correctly including movement alarm and emergency stops.
6. Ensure mast surfaces are clean and NOT greased.



**WEEKLY MAINTENANCE**

Check key fixings are secure: on wheels and castors, cage pivot fixing, basket tray bolts, cantilever deck stops.

Check battery terminal connections are tight.

Check mast rollers and mast surfaces for damage or ingrained debris. Brush off if appropriate. Check brushes brush against mast.

Check main control cable (curly) is not snagged or damaged and is held at each end with a cable clip.

Check that cantilever deck slides and operates smoothly, the stop pads prevent it extending too far and all securing bolts are in place and tight.

**MONTHLY MAINTENANCE**

Check rollers and mast surfaces for damage. Ensure brushes are fitted correctly and brush against mast surface.

**HYDRAULIC OIL**

The hydraulic oil must be replaced on an annual basis. If the oil is not replaced, premature wear and failure of components will occur.

To drain the hydraulic tank, the mast must be in the transport position, and the basket tilted to allow access to the motor/pump unit. The only practical method to remove the oil from the tank is to use a syringe suitable for hydraulic oil, which are easily obtainable, or a vacuum system for hydraulic oil. The hydraulic steel pipe connection to the cylinder must not be disconnected, unless by a competent person. If the connection has been disconnected, then a full pressure test of the system must be conducted prior to placing the machine back into service. No leaks must be evident when the pressure test is conducted.

Refill with grade 32 mineral oil.

**WHEELS AND CASTORS**

It is absolutely essential that the drive wheels and castors are maintained in good condition at all times, for two reasons:

The first is that they act as the stabilisers, and whilst their load capacity is over rated for the application, any failure could result in a serious accident. Secondly, if the bearings become tight, it will make the machine difficult to manoeuvre.

Check all wheels are free from damage and tyre wear. Check both drive wheels turn freely and are not rubbing on chassis side panel. Check that drive wheel securing clamp is fixed with grub screw. Check drive wheel gearbox fixings are all present and tight. Check castors swivel freely, that both top mounting bolt and axle bolt are secure.

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**When replacing components for any reason, only use OEM specification parts, either supplied from the manufacturer or authorised in writing by the manufacturer. Warranties and design approvals will be void if alternative components are fitted.**

**It is essential to obtain manufacturer's approval of any alteration which might affect stability, strength or performance, in writing before proceeding.**

## MAST MAINTENANCE

The mast sections run on maintenance free rollers, and on the outer mast surface where the roller runs, a brush is fitted to keep the mast surface clean, preventing debris from collecting on the roller. In addition to these rollers, there are six external plastic screws fitted, which act to hold the mast sections together in torsion. These screws are fitted with M24 lock nuts and can easily be identified at the lower end of the mast sections. Inside the mast there are additional wear pads and rollers, which can be accessed from the top of the mast. These items are not adjustable, and it is very unlikely that any wear will occur.

The mast is raised and lowered with a multistage hydraulic piston, which raises the outer mast section first, followed by the middle mast section. When the mast is lowered, the sections close in the reverse sequence i.e. the middle section and outer section close together until the bottom of the middle section contacts the lower rest buffers, and the outer section continues to close over the middle section. It is essential the mast closes in this sequence.

To ensure the mast sections move in the correct sequence, and do not bind, ensure the wear screws are not over tightened as follows: Ensure the gap between the overlapping mast section and the inner mast section is even on both sides. The distance is approximately 12mm, but may vary slightly due to manufacturing tolerances.

Loosen the wear screw lock nut and turn the screw until it just contacts the inner mast surface. Do not force the screw. Tighten the locknut using caution

not to shear the screw thread. Raise and lower the mast to check it does not bind.

In practice, it is far more likely that the screws may wear so an excessive gap between the mast section and the wear screw develops. This will be evident by free sideways movement of the basket. If this free movement is thought to be excessive, check the gap between the screw and the mast with a feeler gauge. The correct gap should be no more than 0.2mm, although the mast is serviceable with a gap up to 0.5mm.

## TILT SWITCH CHECK

Pre-operation check; Elevate platform a small distance and drive machine down or up a gentle slope of around 3 degrees. Machine should stop travelling and sound alarm.

To check the correct operation of the tilt switch raise the platform from the transport position a small distance (e.g. 50mm) on truly level ground. Position a suitable lever under one side of the platform and raise this side of the machine from the ground. The tilt switch should operate when the drive wheel is approximately 25 - 30mm from the ground. This should really be repeated from both sides of the machine to compensate for out of level ground...i.e. you might have 20mm one side and 40mm the other side.

When the platform is in the transport position i.e. fully closed the alarm and cut out should not operate when the above test is repeated. If the cut out and alarm does operate when in the transport position then it is most likely the limit switch is not adjusted correctly or is faulty.

The limit switch and wiring are installed so that in a failure mode condition the system will operate in the safe condition only i.e. tilt switch operates and cuts out lift when out of level tolerance exceeded.

## PLATFORM LOAD SENSING CHECK

With the platform in the retracted position, place 200kgs in the platform. Elevate the platform from the ground controls so the platform floor is approximately 2.0m from the ground. The addition of a small extra load should operate the alarm (there is a small delay from switching to alarm sounding), up to a maximum of 40kg additional load.

MAINTENANCE FREQUENCY

MAINTENANCE FREQUENCY TABLE				
Item	Daily	Monthly	6 Months	12 Months
Batteries/Connections	●			
Oil Level	●			
Visual Inspection	●			
Spirit Level	●			
Castors	●			
Check Mast & Rollers		●		
Change Hydraulic Oil				●
Motor Gearbox		●		
Cantilever Deck Mechanism		●		
Load sensing Mechanism			●	
Thorough examination (LOLER)			●	
High/Low Speed Drive	●			
Tilt Switch Operation	●			

**Thorough examination must include checking:**

- All electrical connections, including battery
- All hydraulic connections and cylinder for leaks
- All connections are secure to powerpack
- All control levers and switches to be in good serviceable order
- Handrails are undamaged and secure
- Operation of gate latch
- Basket tray condition
- Mechanical condition of lifting structure and chassis
- Swivel castor condition and security
- Axle and wheels for condition and security
- Condition and operation of spirit level
- Component and battery covers for condition
- Condition of all labelling - all labels are affixed and legible
- Carry out a full operation check and load test
- Check load sensing is working correctly by applying full safe working load, plus controlled overload
- Cantilever deck slides and operates smoothly, the stop pads prevent it extending too far and all securing bolts are in place and tight
- Motor gearboxes/drive wheels for condition and security of fixing
- Drive wheels are not rubbing on panels

## TRANSPORT INSTRUCTIONS

It is the responsibility of the transport driver to ensure the machine is safely secured to the transport vehicle.

Ensure the transport vehicle has the load capacity and dimensions in order to safely and legally carry the weight and size of the machine.

Ensure straps/chains are of adequate capacity and condition to safely secure the machine.

Always ensure the machine is transported in the upright position. Never lay flat.

Ensure the transport vehicle is parked on a level surface and the parking brake is applied.

## LOADING

The machine can be loaded via a forklift, tail lift, or driven up a ramp on to a trailer.

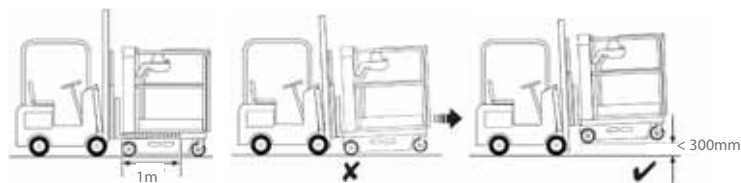
Always ensure the platform is fully lowered to the transport position and that there is no operator in the platform.

When using a forklift ensure it has the rated load capacity and required reach.

The machine has two forklift pockets incorporated into the chassis which are accessed from the mast end of the machine. The forklift pockets are indicated via a label. Ensure the forklift arms slide into the sockets by at least 1m. Never raise the machine more than 300mm from the ground when travelling with the machine loaded onto the forklift, until adjacent to the transport vehicle and when ready to raise the machine on to the trailer bed. Load the machine on to the trailer in such a way that it is not necessary for the driver to have to climb and walk on the trailer to locate and tie down the machine.

**Do not scrape the drive wheels along the floor when lowering or raising the machine from the ground as this will damage the wheels.**

Note: Only trained qualified forklift drivers are to load the machine.



If loading with a tail lift ensure the vehicle is parked on firm level ground and that the tail lift has the rated load capacity to lift the machine. Always walk and operate the machine when driving on to the bed of the vehicle from outside the platform.



When loading via a ramp the preferred method is to walk alongside the machine and control the drive function from this position. The machine should additionally be connected to a winch on the trailer and the winch operated as the machine is driven up the ramp. **Do not use the winch to drag the machine up the ramp.**





The machine is fitted with directional castor locks so that the machine will move in a straight line when the locks are activated thereby making loading easier and safer, especially if on a narrow ramp.

The chassis has four locations for trailer straps in each corner and which are identified with a label. Refer to the diagram to identify the tie down point locations.

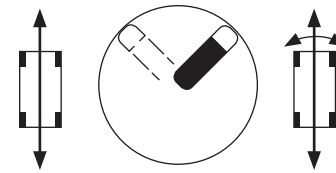


### CASTOR DIRECTIONAL LOCK INSTRUCTIONS

The machine is fitted with swivel rotational locks to the two castor wheels at the platform entrance end of the machine.

By referring to the label on the control arm at the platform (as the below diagram) when the switch is rotated to the right the castor locks are off and the machine is able to be steered left or right as required when driving backward or forward.

When the switch is rotated to the left the castor locks are activated and will engage the castors when the machine is driven in a straight line backward or forward. When engaged the machine will only drive in a straight line backward or forward although a very small amount of directional manoeuvre is still possible by operating the joystick to steer.



The castors can be locked at any time when it is desirable to ensure the machine travels in a straight line e.g. when installing cabling where it simplifies the task of moving the platform, or perhaps there might be occasions where it is undesirable for the steering to operate for safety reasons. The locks can be disengaged at any time by rotating the switch to the right.

### STORAGE

If the machine is to be taken out of operation for a period longer than one month, the following precautions should be taken.

Ideally, the battery charger should be switched on. The charger has an in-built maintenance mode, and will maintain the battery in good condition indefinitely. If a Lead Acid battery is fitted then the electrolyte level must still be checked periodically (not required if AGM battery is fitted). If this is not practical, then the charger should be switched on once a week for half an hour. This is especially important in cold conditions.

The hydraulic oil must be replaced (recommended after 3 months of non-use) as for the procedure in the Maintenance Procedures section.

If the storage period is for an undetermined period, it is advisable that the battery be removed and stored in a secure battery storage container. It is also recommended that all external electrical and hydraulic connections be wax coated to prevent corrosion.

### WARRANTY

Your Nano SP / 830SP (The Machine) is covered by a parts and components warranty as stated in the purchase terms and conditions (excluding battery and battery charger).

The Manufacturer, Power Towers Ltd (The Company), undertakes to replace or repair, free of charge, any defective part or component which the company considers to be due to faulty workmanship or material, within the warranty period, except for:

Defects arising from neglect, misuse or unauthorised modifications.

Damage caused by abuse, misuse, dropping or other similar damage caused by or as a result of failure to follow transportation, storage, installation, loading or operation instructions.

Alterations, additions or repairs carried out by persons other than the Manufacturer or their recognised distributors.

Transportation or shipment costs to and from the Manufacturer or their recognised agents, for repair or assessment against a warranty claim, on any machine or component.

Materials and/or labour costs to renew, repair or replace components due to fair wear and tear.

Faults arising from the use of non-standard or additional parts, or any consequential damage or wear caused by the fitting or use of such parts.

### IMPORTANT

Warranty may, at the sole discretion of the manufacturer, be voided if the scheduled service/inspections are not carried out in accordance with this manual.

The Manufacturer and/or their recognised agents, directors, employees or insurers will not be held liable for consequential or other damages, losses or expenses in connection with or by reason of or the inability to use the machine for any purpose.

### MODIFICATIONS

If additional equipment or any third party work, modifications or alterations are to be carried out on the machine which will involve any welding, drilling or any form of cutting or distortion of materials, full written approval must be obtained from the Manufacturer prior to the work being carried out.

ELECTRICAL PARTS		Part Number			
A	AGM Battery	PT-E-002AGM			
*	Lead Acid Battery	PT-E-002			
B	White Push Button - Ground	PT-E-006			
C	Black Push Button - Platform and Ground	PT-E-007			
D	Joystick Module	PTNSP-E-601			
E	Tilt Alarm Module	PTNSP-E-603			
F	Flashing Amber Beacon	PTNSP-E-614			
G	Emergency Stop c/w Key Switch	PTNSP-E-621			
H	Emergency Stop / Battery Isolator	PTNSP-E-621			
I	LED (Red) - Control Arm	PTNSP-E-626			
J	24/8 90-250v AC Battery Charger	PTNSP-E-630			
K	Selector Switch - Ground	PTNSP-E-643			
L	110v Surface Mount Plug	PTNSP-E-645			
* Item not shown here					
Notes					

ELECTRICAL PARTS		Part Number
A	Load Sensing limit Switch	PTNSP-E-648
B	Tilt Alarm Override Switch	PTNSP-E-649
C	Elevated Drive Speed & Mast Limit Switch	PTNSP-E-650
D	Ground Control Enclosure Complete	PTNSPE-E-301
E	Coiled Cable To Basket	PTNSPE-E-302
F	ECU 90A	PTNSPE-E-303
G	Drive Motor/Gearbox Complete LHS	PTNSPE-E-304L
H	Drive Motor/Gearbox Complete RHS	PTNSPE-E-305R
I	Battery Charger 24/8 220-240v AC IP65	PTNSPE-E-306
J	Start Solenoid	PTNSPE-E-307
K	Lock Castor Solenoid	PTNSPE-E-308
L	Control Arm Complete	PTNSPE-E-313



Notes



MECHANICAL PARTS		Part Number
A	Emergency Lowering Cable	PTNSPE-E-309
B	SPE Drive Wheel	PTNSPE-M-701
C	Swivel Castor	PTNSPE-M-702
D	Powerpack/Battery Cover Plate	PTNSPE-M-703
E	ECU Cover Plate	PTNSPE-M-704
F	Guardrails Complete Outer	PTNSPE-M-705
G	Guardrails Complete Inner (Set of 3)	PTNSPE-M-706
H	Gate	PTNSPE-M-707
I	Platform Deck Tray	PTNSPE-M-708
J	Cantilever Deck Tray	PTNSPE-M-709
K	SP Tool Tray c/w Fixings	PTNSP-M-505
L	Platform Gas Strut	PTNSP-M-520



A



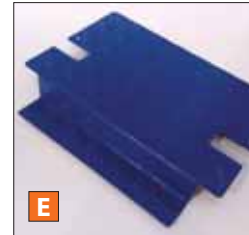
B



C



D



E



F



G



H



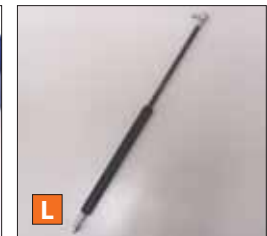
I



J



K



L

Notes

# KEY SPARE PARTS

MECHANICAL PARTS		Part Number
A	Cantilever Tread Lock c/w Hook	PTNSP-M-527-2
B	Basket Safety Prop	PTNSP-M-529
HYDRAULIC PARTS		Part Number
C	24v Powerpack Solenoid c/w Valve	PTNSPE-H-403
D	Emergency Lowering Valve Cartridge	PTNSPE-H-404
E	SPE Powerpack	PTNSPE-H-401
F	SPE Steel Pipe Kit	PTNSPE-H-402
G	Cylinder c/w Spacer Collar	PTNSP-H-560
H	Cylinder Seal kit	PTNSP-H-561
MISCELLANEOUS PARTS		Part Number
I	Decal Set 1	PTNSPE-M-801
J	Decal Set 2	PTNSPE-M-802



Notes

